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Description

Self-foaming or foam-like preparations

The present invention relates to self-foaming and/or foam-like cosmetic and dermatological preparations, in particular to skincare cosmetic and dermatological preparations.

Foams or foam-like preparations are a type of disperse system.

By far the most important and best known disperse systems are emulsions. Emulsions are two- or multi-phase systems of two or more liquids which are insoluble or only slightly soluble in one another. The liquids (pure or as solutions) are present in an emulsion in a more or less fine distribution, which generally has only limited stability.

Foams are structures of gas-filled, spherical or polyhedral cells which are delimited by liquid, semiliquid, high-viscosity or solid cell ribs. The cell ribs, connected via points of intersection form a continuous framework. The foam lamellae stretch between the cell ribs (closed-cell foam). If the foam lamellae are disturbed or if they flow back into the cell rib at the end of foam formation, an open-cell foam is obtained. Foams are also thermodynamically unstable since a reduction in the surface area leads to the production of surface energy. The stability and thus the existence of a foam is thus dependent on to what extent it is possible to prevent its self-destruction.

Cosmetic foams are usually dispersed systems of liquids and gases, where the liquid represents the dispersant and the gas represents the dispersed substance. Foams of low-viscosity liquids are temporarily stabilized by surface-active substances (surfactants, foam stabilizers). Because of their large internal surface area, such surfactant foams have a high adsorption capacity, which is utilized, for example, in cleaning and washing

operations. Accordingly, cosmetic foams are used, in particular, in the fields of cleansing, for example as shaving foam, and of haircare.

To generate foam, gas is bubbled into suitable liquids, or foam formation is achieved by vigorously beating, shaking, spraying or stirring the liquid in the gas atmosphere in question, provided that the liquids comprise suitable surfactants or other interface-active substances ("foam formers"), which, apart from interfacial activity, also have a certain film-forming ability.

Cosmetic foams have the advantage over other cosmetic preparations that they permit a fine distribution of active ingredients on the skin. However, cosmetic foams can generally only be achieved using particular surfactants, which, moreover, are often not well tolerated by the skin.

A further disadvantage of the prior art is that such foams have only low stability, for which reason they usually collapse within approximately 24 hours. A requirement of cosmetic preparations, however, is that they have stability for years, as far as possible. This problem is generally taken into account by the fact that the consumer produces the actual foam himself just before use using a suitable spray system for which purpose, for example, it is possible to use spray cans in which a liquefied pressurized gas serves as propellant gas. Upon opening the pressure valve, the propellant liquid mixture escapes through a fine nozzle, and the propellant evaporates, leaving behind a foam.

After-foaming cosmetic preparations are also known per se. They are firstly applied to the skin from an aerosol container in flowable form and, after a short delay, develop the actual foam only once they are on the skin under the effect of the after-foaming agent present, for example a shaving foam. After-foaming preparations are often in specific formulation forms, such as, for example, after-foaming shaving gels or the like.

However, the prior art does not include any sort of cosmetic or dermatological preparations which could be foamed as early as during the preparation and nevertheless have a sufficiently high stability in order to be packaged in the usual manner, stored and put on to the market.

An object of the present invention was therefore to enrich the prior art and to provide cosmetic or dermatological self-foaming and/or foam-like preparations which do not have the disadvantages of the prior art.

German laid-open specification DE 197 54 659 discloses that carbon dioxide is a suitable active ingredient for stabilizing or increasing the epidermal ceramide synthesis rate, which may serve to enhance the permeability barrier, reduce the transepidermal water loss and increase the relative skin moisture. To treat the skin, the CO_2 is, for example, dissolved in water, which is then used to rinse the skin. However, the prior art hitherto does not include any sort of cosmetic or dermatological bases in which a gaseous active ingredient could be incorporated in an adequate, i.e. effective, concentration.

It was thus a further object of the present invention to find cosmetic or dermatological bases into which effective amounts of gaseous active ingredients can be incorporated.

It was surprising and could not have been foreseen by the person skilled in the art that self-foaming and/or foam-like cosmetic or dermatological preparations which comprise

I. an emulsifier system which consists of
   A. at least one emulsifier A chosen from the group of wholly neutralized, partially neutralized or unneutralized branched and/or unbranched, saturated and/or unsaturated fatty acids having a chain length of from 10 to 40 carbon atoms,
   B. at least one emulsifier B chosen from the group of polyethoxylated fatty acid esters having a chain length of from 10 to 40 carbon atoms and a degree of ethoxylation of from 5 to 100 and
   C. at least one coemulsifier C chosen from the group of saturated and/or unsaturated, branched and/or unbranched fatty alcohols having a chain length of from 10 to 40 carbon atoms,

and

II. 1 to 90% by volume, based on the total volume of the preparation, of at least one gas chosen from the group consisting of air, oxygen, nitrogen, helium, argon, nitrous oxide (N_2O) and carbon dioxide (CO_2).

overcome the disadvantages of the prior art.

For the purposes of the present invention, "self-foaming" or "foam-like" are understood as meaning that the gas bubbles (any) are present in distributed form in one (or more) liquid phase(s) where the preparations do not necessarily have to have the appearance of a foam in macroscopic terms. Self-foaming and/or foam-like cosmetic or dermatological preparations according to the invention can, for example be macroscopically visible and dispersed systems of gases dispersed in liquids. The foam character can, however, for example, be visible also only under a (light) microscope. Moreover, self-foaming and/or foam-like preparations according to the invention are, particularly when the gas bubbles are too small in order to be recognized under a light microscope, also recognizable from the sharp increase in volume of the system.

The preparations according to the invention are entirely satisfactory preparations in every respect. It was particularly surprising that the foam-like preparations according to the invention are extraordinarily stable, even in cases of an unusually high gas volume. Accordingly, they are particularly suitable for use as bases for preparation forms having diverse use purposes. The preparations according to the invention have very good sensory properties, such as, for example, distributability on the skin or the ability to be absorbed into the skin, and are, moreover, characterized by above-average skincare.

The invention further provides for

the use of self-foaming and/or foam-like cosmetic or dermatological preparations which comprise

an emulsifier system which consists of

A. at least one emulsifier A chosen from the group of wholly neutralized, partially neutralized or unneutralized branched and/or unbranched, saturated and/or unsaturated fatty acids having a chain length of from 10 to 40 carbon atoms,

B. at least one emulsifier B chosen from the group of polyethoxylated fatty acid esters having a chain length of from 10 to 40 carbon atoms and a degree of ethoxylation of from 5 to 100 and

C. at least one coemulsifier C chosen from the group of saturated and/or unsaturated, branched and/or unbranched fatty alcohols having a chain length of from 10 to 40 carbon atoms

as cosmetic or dermatological bases for gaseous active ingredients.

The emulsifier(s) A is/are preferably chosen from the group of fatty acids which have been wholly or partially neutralized with customary alkalies (such as, for example, sodium hydroxide and/or potassium hydroxide, sodium carbonate and/or potassium carbonate, and mono- and/or triethanolamine). Stearic acid and stearates, isostearic acid and isostearates, palmitic acid and palmitates, and myristic acid and myristates, for example, are particularly advantageous.

The emulsifier(s) B is/are preferably chosen from the following group: PEG-9 stearate, PEG-8 distearate, PEG-20 stearate, PEG-8 stearate, PEG-8 oleate, PEG-25 glyceryl trioleate, PEG-40 sorbitan lanolate, PEG-15 glyceryl ricinoleate, PEG-20 glyceryl stearate, PEG-20 glyceryl isostearate, PEG-20 glyceryl oleate, PEG-20 methylglucose sesquistearate, PEG-30 glyceryl isostearate, PEG-20 glyceryl laurate, PEG-30 stearate, PEG-30 glyceryl stearate, PEG-40 stearate, PEG-30 glyceryl laurate, PEG-50 stearate, PEG-100 stearate, PEG-150 laurate. Particularly advantageous are, for example, polylethoxylated stearic esters.

The coemulsifier(s) C is/are preferably chosen according to the invention from the following group: butyloctanol, butyldecanol, hexyloctanol, hexyldecanol, octyldodecanol, behenyl alcohol ($C_{22}H_{45}OH$), cetearyl alcohol [a mixture of cetyl alcohol ($C_{16}H_{33}OH$) and stearyl alcohol ($C_{18}H_{37}OH$)], lanolin alcohols (wool wax alcohols, which are the unsaponifiable alcohol fraction of wool wax which is obtained following the saponification of wool wax). Particular preference is given to cetyl alcohol and cetylstearyl alcohol.

It is advantageous according to the invention to choose the weight ratios of emulsifier A to emulsifier B to coemulsifier C (A : B : C) as a : b : c, where a, b and c, independently of one another, may be rational numbers from 1 to 5, preferably from 1 to 3. Particular preference is given to a weight ratio of approximately 1 : 1 : 1.

It is advantageous for the purposes of the present invention to choose the total amount of emulsifiers A and B and of coemulsifier C from the range from 2 to 20% by weight, advantageously from 5 to 15% by weight, in particular from 8 to 13% by weight, in each case based on the total weight of the formulation.

For the purposes of the present invention, it is particularly preferred if the gas phase of the preparations comprises carbon dioxide or consists entirely of carbon dioxide. It is particularly advantageous if carbon dioxide is a or the active ingredient in the preparations according to the invention.

Compositions according to the invention develop, even during their preparation – for example during stirring or upon homogenization – fine-bubble foams. According to the invention, fine-bubble, rich foams of excellent cosmetic elegance are obtainable. Furthermore, preparations which are particularly well tolerated by the skin are obtainable according to the invention, where valuable ingredients can be distributed on the skin in a particularly good manner.

It may be advantageous, although it is not necessary, for the formulations according to the present invention to comprise further emulsifiers. Preference is given to using those emulsifiers which are suitable for the preparation of W/O emulsions, it being possible for these to be present either individually or else in any combinations with one another.

The further emulsifier(s) is/are advantageously chosen from the group which comprises the following compounds:
polyglyceryl-2 dipolyhydroxystearate, PEG-30 dipolyhydroxystearate, cetyldimethicone copolyol, glycol distearate, glycol dilaurate, diethylene glycoldilaurate, sorbitan trioleate, glycol oleate, glyceryl dilaurate, sorbitan tristearate, propylene glycol stearate, propylene glycol laurate, propylene glycol distearate, sucrose distearate, PEG-3 castor oil, pentaerythrityl mono stearate, pentaerythrityl sesquioleate, glyceryl oleate, glyceryl stearate, glyceryl diisostearate, pentaerythrityl monooleate, sorbitan sesquioleate, isostearyl diglyceryl succinate, glyceryl caprate, palm glycerides, cholesterol, lanolin, glyceryl oleate (with 40% monoester), polyglyceryl-2 sesquiisostearate, polyglyceryl-2 sesquioleate, PEG-20 sorbitan beeswax, sorbitan oleate, sorbitan isostearate, trioleyl phosphate, glyceryl stearate and ceteareth-20 (Teginacid from Th. Goldschmidt), sorbitan stearate, PEG-7 hydrogenated castor oil, PEG-5-soyasterol, PEG-6 sorbitan beeswax, glyceryl stearate SE, methylglucose sesquistearates, PEG-10 hydrogenated castor oil, sorbitan palmitate, PEG-22/dodecyl glycol copolymer, polyglyceryl-2 PEG-4 stearate, sorbitan laurate, PEG-4 laurate, polysorbate 61, polysorbate 81, polysorbate 65, polysorbate 80, triceteareth-4 phosphate, triceteareth-4 phosphate and sodium C_{14-17} alkyl

sec sulfonate (Hostacerin CG from Hoechst), glyceryl stearate and PEG-100 stearates (Arlacel 165 from ICI), polysorbate 85, trilaureth-4 phosphate, PEG-35 castor oil, sucrose stearate, trioleth-8 phosphate, C_{12-15} pareth-12, PEG-40 hydrogenated castor oil, PEG-16 soyasterol, polysorbate 80, polysorbate 20, polyglyceryl-3 methylglucose distearate, PEG-40 castor oil, sodium cetearyl sulfate, lecithin, laureth-4 phosphate, propylene glycol stearate SE, PEG-25 hydrogenated castor oil, PEG-54 hydrogenated castor oil, glyceryl stearate SE, PEG-6 caprylic/capric glycerides, glyceryl oleate and propylene glycol, glyceryl lanolate, polysorbate 60, glyceryl myristate, glyceryl isostearate and polyglyceryl-3 oleate, glyceryl laurate, PEG-40 sorbitan peroleate, laureth-4, glycerol monostearate, isostearyl glyceryl ether, cetearyl alcohol and sodium cetearyl sulfate, PEG-22 dodecyl glycol copolymer, polyglyceryl-2 PEG-4 stearate, pentaerythrityl isostearate, polyglyceryl-3-diisostearate, sorbitan oleate and hydrogenated castor oil and Cera alba and stearic acid, sodium dihydroxycetyl phosphate and isopropyl hydroxycetyl ether, methylglucose sesquistearate, methylglucose dioleate, sorbitan oleate and PEG-2 hydrogenated castor oil and ozokerite and hydrogenated castor oil, PEG-2 hydrogenated castor oil, PEG-45/dodecyl glycol copolymer, methoxy PEG-22/dodecyl glycol copolymer, hydrogenated cocoglycerides, polyglyceryl-4 isostearate, PEG-40 sorbitan peroleate, PEG-40 sorbitan perisostearate, PEG-8 beeswax, laurylmethicone copolyol, Polyglyceryl-2 laurate, stearamidopropyl PG dimonium chloride phosphate, PEG-7 hydrogenated castor oil, triethyl citrate, glyceryl stearate citrate, cetyl phosphate, polyglycerol methylglucose distearate, poloxamer 101, potassium cetyl phosphate, glyceryl isostearate, polyglyceryl-3 diisostearates.

Preferably, for the purposes of the present invention, the further emulsifier(s) is/are chosen from the group of hydrophilic emulsifiers. According to the invention, particular preference is given to mono-, di- and tri-fatty acid esters of sorbitol.

The total amount of further emulsifiers is, according to the invention, advantageously chosen to be less than 5% by weight, based on the total weight of the formulation.

The list of given further emulsifiers which can be used for the purposes of the present invention is not of course intended to be limiting.

Particularly advantageous self-foaming and/or foam-like preparations for the purposes of the present invention are free from mono- or diglyceryl fatty acid esters. Particular preference is given to preparations according to the invention which comprise no glyceryl stearate, glyceryl isostearate, glyceryl diisostearate, glyceryl oleate, glyceryl palmitate, glyceryl myristate, glyceryl lanolate and/or glyceryl laurate.

The oil phase of the preparations according to the invention is advantageously chosen from the group of nonpolar lipids having a polarity ≥ 30 mN/m. Particularly advantageous nonpolar lipids for the purposes of the present invention are those listed below.

Manufacturer	Trade name	**INCI name**	**Polarity mN/m**
Total SA	Ecolane 130	Cycloparaffin	49.1
Neste PAO N.V. (Supplier Hansen & Rosenthal)	Nexbase 2006 FG	Polydecene	46.7
Chemische Fabrik Lehrte	Polysynlane	Hydrogenated Polyisobutene	44.7
Wacker	Wacker Silicon oil AK 50	Polydimethylsiloxane	46.5
EC Erdölchemie (Supplier Bayer AG)	Solvent ICH	Isohexadecane	43.8
DEA Mineralöl (Supplier Hansen & Rosenthal) Tudapetrol	Pionier 2076	Mineral Oil	43.7
DEA Mineralöl (Supplier Hansen & Rosenthal) Tudapetrol	Pionier 6301	Mineral Oil	43.7
Wacker	Wacker Silicone oil AK 35	Polydimethylsiloxane	42.4
EC Erdölchemie GmbH	Isoeicosane	Isoeicosane	41.9
Wacker	Wacker Silicone oil AK 20	Polydimethylsiloxane	40.9
Condea Chemie	Isofol 1212 Carbonate		40.3
Gattefossé	Softcutol O	Ethoxydiglycol Oleate	40.5
Creaderm	Lipodermanol OL	Decyl Olivate	40.3
Henkel	*Cetiol S*	Dioctylcyclohexane	39.0
DEA Mineralöl (Supplier Hansen & Rosenthal) Tudapetrol	Pionier 2071	Mineral Oil	38.3
WITCO BV	Hydrobrite 1000 PO	Paraffinum Liquidum	37.6
Goldschmidt	Tegosoft HP	Isocetyl Palmitate	36.2
Condea Chemie	Isofol Ester 1693		33.5
Condea Chemie	Isofol Ester 1260		33.0
Dow Corning	Dow Corning Fluid 245	Cyclopentasiloxane	32.3
Unichema	Prisorine 2036	Octyl Isostearate	31.6
Henkel Cognis	Cetiol CC	Dicaprylyl Carbonate	31.7
ALZO (ROVI)	Dermol 99	Trimethylhexyl Isononanoate	31.1
ALZO (ROVI)	Dermol 89	2- Ethylhexyl Isononanoate	31.0
Unichema	Estol 1540 EHC	Octyl Cocoate	30.0

The content of the lipid phase is advantageously chosen to be less than 30% by weight, preferably between 2.5 and 30% by weight, particularly preferably between 5 and 15% by weight, in each case based on the total weight of the preparation. It may also be advantageous, although it is not obligatory, for the lipid phase to comprise up to 40% by weight, based on the total weight of the lipid phase, of polar lipids (having a polarity of ≤ 20 mN/m) and/or medium-polarity lipids (having a polarity of from 20 to 30 mN/m)

For the purposes of the present invention, particularly advantageous polar lipids are all native lipids, such as, for example, olive oil, sunflower oil, soybean oil, groundnut oil, rapeseed oil, almond oil, palm oil, coconut oil, castor oil, wheatgerm oil, grapeseed oil, thistle oil, evening primrose oil, macadamia nut oil, corn oil, avocado oil and the like and those listed below.

Manufacturer	Trade name	INCI name	Polarity mN/m
Condea Chemie	Isofol 14 T	Butyl Decanol (+) Hexyl Octanol (+) Hexyl Decanol (+) Butyl Octanol	19.8
Lipochemicals INC. / USA (Induchem)	Lipovol MOS-130	Tridecyl Stearate(+) Tridecyl Trimellitate(+) Dipentaerythrityl Hexacaprylate/Hexacaprate	19.4
	Castor oil		19.2
CONDEA Chemie	Isofol Ester 0604		19.1
Huels CONDEA Chemie	Miglyol 840	Propylene Glycol Dicaprylate/Dicaprate	18.7
CONDEA Chemie	Isofol 12	Butyl Octanol	17.4
Goldschmidt	Tegosoft SH	Stearyl Heptanoate	17.8
	Avocado oil		14.5
Henkel Cognis	Cetiol B	Dibutyl Adipate	14.3
ALZO (ROVI)	Dermol 488	PEG 2 Diethylene hexanoate	10.1
Condea Augusta S.P.A.	Cosmacol ELI	C12-13 Alkyl Lactate	8.8
ALZO (ROVI)	Dermol 489	Diethylene Glycol Dioctanoate(/ Diisononanoate	8.6
Condea Augusta S.P.A.	Cosmacol ETI	Di-C12/13 Alkyl Tartrate	7.1
Henkel Cognis	Emerest 2384	Propylene Glycol Monoisostearate	6.2
Henkel Cognis	Myritol 331	Cocoglycerides	5.1

Manufactur r	Trad nam	INCI name	Polarity
Unichema	Prisorine 2041 GTIS	Triisostearin	2.4

Particularly advantageous medium-polar lipids for the purposes of the present invention are those listed below

Manufacturer	Trade name	INCI name	Polarity (Water) mN/m
Henkel Cognis	Cetiol OE	Dicaprylyl Ether	30.9
	Dihexyl carbonate	Dihexyl Carbonate	30.9
Albemarle S.A.	Silkflo 366 NF	Polydecene	30.1
Stearinerie Dubois Fils	DUB VCI 10	Isodecyl Neopentanoate	29.9
ALZO (ROVI)	Dermol IHD	Isohexyl decanoate	29.7
ALZO (ROVI)	Dermol 108	Isodecyl Octanoate	29.6
	Dihexyl Ether	Dihexyl Ether	29.2
ALZO (ROVI)	Dermol 109	Isodecyl 3,5,5 Trimethyl Hexanoate	29.1
Henkel Cognis	Cetiol SN	Cetearyl Isononanoate	28.6
Unichema	Isopropyl palmitate	Isopropyl palmitate	28.8
Dow Corning	DC Fluid 345	Cyclomethicone	28.5
Dow Corning	Dow Corning Fluid 244	Cyclopolydimethylsiloxane	28.5
Nikko Chemicals Superior Jojoba Oil Gold	Jojoba oil Gold		26.2
Wacker	Wacker AK 100	Dimethicone	26.9
ALZO (ROVI)	Dermol 98	2- Ethylhexanoic acid 3,5,5 trimethyl ester	26.2
Dow Corning	Dow Corning Fluid 246	Open	25.3
Henkel Cognis	Eutanol G	Octyldodecanol	24.8
Condea Chemie	Isofol 16	Hexyl Decanol	24.3
ALZO (ROVI)	Dermol 139	Isotridecyl 3,5,5 Trimethylhexanonanoate	24.5
Henkel Cognis	Cetiol PGL	Hexyldecanol (+) Hexyl Decyl Laurate	24.3
	Cegesoft C24	Octyl Palmitate	23.1
Gattefossé	M.O.D.	Octyldodeceyl Myristate	22.1
	Macadamia Nut Oil		22.1
Bayer AG, Dow Corning	Silicone oil VP 1120	Phenyl Trimethicone	22.7
CONDEA Chemie	Isocarb 12	Butyl Octanoic acid	22.1
Henkel Cognis	Isopropyl stearate	Isopropyl Stearate	21.9
WITCO, Goldschmidt	Finsolv TN	C12-15 Alkyl Benzoate	21.8
Dr. Straetmans	Dermofeel BGC	Butylene Glycol Caprylate/Caprate	21.5

Manufactur r	Trade name	INCI name	Polarity (Water)
Unichema Huels	Miglyol 812	Caprylic/Capric Triglyceride	21.3
Trivent (via S. Black)	Trivent OCG	Tricaprylin	20.2
ALZO (ROVI)	Dermol 866	PEG „ Diethylhexanoate/ Diisononanoate/ Ethylhexyl Isononanoate	20.1

Of the hydrocarbons, paraffin oil, and further hydrogenated polyolefins, such as hydrogenated polyisobutenes, squalane and squalene, in particular, are to be used advantageously for the purposes of the present invention.

The cosmetic and/or dermatological preparations according to the invention can have the customary composition. For the purposes of the present invention, skincare preparations are particularly advantageous; they can be used for cosmetic and/or dermatological light protection, and also for the treatment of the skin and/or of the hair and as make-up products in decorative cosmetics. A further advantageous embodiment of the present invention consists in aftersun products.

Corresponding to their structure, cosmetic or topical dermatological compositions can be used, for the purposes of the present invention, for example as skin protection cream, day cream or night cream etc. It may be possible and advantageous to use the compositions according to the invention as a base for pharmaceutical formulations.

Just as emulsions of liquid and solid consistency are used as cleansing lotions or cleansing creams, the preparations according to the invention can also be "cleansing foams" which can be used, for example, for the removal of make-up or as a mild washing foam, possibly also for bad skin. Such cleansing foams can advantageously also be used as "rinse-off" preparations, which are rinsed from the skin following application.

The cosmetic and/or dermatological preparations according to the invention can also advantageously be in the form of a foam for care of the hair or of the scalp, in particular a foam for arranging the hair, a foam which is used when blow-drying the hair, a styling foam and treatment foam.

For use, the cosmetic and dermatological preparations according to the invention are applied to the skin and/or the hair in an adequate amount in the manner customary for cosmetics.

The cosmetic and dermatological preparations according to the invention can comprise cosmetic auxiliaries, as are customarily used in such preparations, e.g. preservatives, preservative assistants, bactericides, perfumes, dyes, pigments which have a coloring action, moisturizers and/or humectants, fillers which improve the feel on the skin, fats, oils, waxes or other customary constituents of a cosmetic or dermatological formulation, such as alcohols, polyols, polymers, foam stabilizers, electrolytes, organic solvents or silicone derivatives.

Advantageous preservatives for the purposes of the present invention are, for example, formaldehyde donors (such as, for example, DMDM hydantoin), iodopropylbutyl carbamate (e.g. those available under the trade names Koncyl-L, Koncyl-S and Konkaben LMB from Lonza), parabens, phenoxyethanol, ethanol, benzoic acid and the like. According to the invention, the preservative system usually also advantageously comprises preservative assistants, such as, for example, octoxyglycerol, glycine soybean etc.

Particularly advantageous preparations are also obtained if antioxidants are used as additives or active ingredients. According to the invention, the preparations advantageously comprise one or more antioxidants. Favorable, but nevertheless optional antioxidants which may be used are all antioxidants customary or suitable for cosmetic and/or dermatological applications.

The antioxidants are advantageously chosen from the group consisting of amino acids (e.g. glycine, histidine, tyrosine, tryptophan) and derivatives thereof, imidazoles (e.g. urocaninic acid) and derivatives thereof, peptides such as D,L-carnosine, D-carnosine, L-carnosine and derivatives thereof (e.g. anserine), carotenoids, carotenes (e.g. α-carotene, β-carotene, lycopene) and derivatives thereof, lipoic acid and derivatives thereof (e.g. dihydrolipoic acid), aurothioglucose, propylthiouracil and other thiols (e.g. thioredoxin, glutathione, cysteine, cystine, cystamine and the glycosyl, N-acetyl, methyl, ethyl, propyl, amyl, butyl and lauryl, palmitoyl, oleyl, γ-linoleyl, cholesteryl and glyceryl

esters thereof) and salts thereof, dilauryl thiodipropionate, distearyl thiodipropionate, thiodipropionic acid and derivatives thereof (esters, ethers, peptides, lipids, nucleotides, nucleosides and salts) and sulfoximine compounds (e.g. buthionine sulfoximines, homocysteine sulfoximine, buthionine sulfones, penta-, hexa-, heptathionine sulfoximine) in very low tolerated doses (e.g. pmol to μmol/kg), and also (metal) chelating agents (e.g. α-hydroxy fatty acids, palmitic acid, phytic acid, lactoferrin), α-hydroxy acids (e.g. citric acid, lactic acid, malic acid), humic acid, bile acid, bile extracts, bilirubin, biliverdin, EDTA, EGTA and derivatives thereof, unsaturated fatty acids and derivatives thereof (e.g. γ-linolenic acid, linoleic acid, oleic acid), folic acid and derivatives thereof, ubiquinone and ubiquinol and derivatives thereof, vitamin C and derivatives (e.g. ascorbyl palmitate, Mg ascorbyl phosphate, ascorbyl acetate), tocopherols and derivatives (e.g. vitamin E acetate), vitamin A and derivatives (vitamin A palmitate) and coniferyl benzoate of benzoin resin, rutinic acid and derivatives thereof, ferulic acid and derivatives thereof, butylhydroxytoluene, butylhydroxyanisole, nordihydroguaiacic acid, nordihydroguaiaretic acid, trihydroxybutyrophenone, uric acid and derivatives thereof, mannose and derivatives thereof, zinc and derivatives thereof (e.g. ZnO, $ZnSO_4$), selenium and derivatives thereof (e.g. selenomethionine), stilbenes and derivatives thereof (e.g. stilbene oxide, trans-stilbene oxide) and the derivatives (salts, esters, ethers, sugars, nucleotides, nucleosides, peptides and lipids) of these listed active ingredients which are suitable according to the invention.

For the purposes of the present invention, water-soluble antioxidants, such as, for example, vitamins, e.g. ascorbic acid and derivatives thereof, can be used particularly advantageously.

A surprising property of the preparations according to the invention is that they are very good vehicles for cosmetic or dermatological active ingredients into the skin, preferred active ingredients being antioxidants which can protect the skin against oxidative stress. Preferred antioxidants here are vitamin E and derivatives thereof, and vitamin A and derivatives thereof.

The amount of antioxidants (one or more compounds) in the preparations is preferably 0.001 to 30% by weight, particularly preferably 0.05 to 20% by weight, in particular 0.1 to 10% by weight, based on the total weight of the preparation.

If vitamin E and/or derivatives thereof are the antioxidant(s), it is advantageous to choose their respective concentrations from the range from 0.001 to 10% by weight, based on the total weight of the formulation.

If vitamin A or vitamin A derivatives, or carotenes or derivatives thereof are the antioxidant(s), it is advantageous to choose their respective concentrations from the range from 0.001 to 10% by weight, based on the total weight of the formulation.

The active ingredients (one or more compounds) can also very advantageously be chosen according to the invention from the group of lipophilic active ingredients, in particular from the following group:

acetylsalicylic acid, atropine, azulene, hydrocortisone and derivatives thereof, e.g. hydrocortisone-17 valerate, vitamins of the B and D series, very favorably vitamin B_1, vitamin B_{12} and vitamin D_1, but also bisabolol, unsaturated fatty acids, namely the essential fatty acids (often also called a vitamin F), in particular gamma-linolenic acid, oleic acid, eicosapentaenoic acid, docosahexaenoic acid and derivatives thereof, chloroamphenicol, caffeine, prostaglandins, thymol, camphor, extracts or other products of a vegetable and animal origin, e.g. evening primrose oil, borage oil or currant seed oil, fish oils, cod-liver oil and also ceramides and ceramide-like compounds, etc.

It is also advantageous to choose the active ingredients from the group of refatting substances, for example purcellin oil, Eucerit® and Neocerit®.

The active ingredient(s) is/are also particularly advantageously chosen from the group of NO synthase inhibitors, particularly if the preparations according to the invention are to be used for the treatment and prophylaxis of the symptoms of intrinsic and/or extrinsic skin aging and for the treatment and prophylaxis of the harmful effects of ultraviolet radiation on the skin.

A preferred NO synthase inhibitor is nitroarginine.

The active ingredient(s) is/are also advantageously chosen from the group which includes catechins and bile esters of catechins and aqueous or organic extracts from plants or

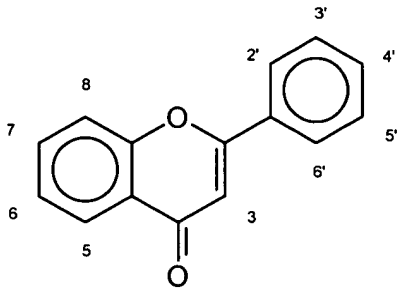
parts of plants which have a content of catechins or bile esters of catechins, such as, for example, the leaves of the Theaceae plant family, in particular of the species Camellia sinensis (green tea). Particularly advantageous are typical ingredients thereof (such as e.g. polyphenols or catechins, caffeine, vitamins, sugar, minerals, amino acids, lipids).

Catechins are a group of compounds which are to be regarded as hydrogenated flavones or anthocyanidines and are derivatives of "catechin" (catechol, 3,3',4',5,7-flavanpentol, 2-(3,4-dihydroxyphenyl)chroman-3,5,7-triol). Epicatechin ((2R,3R)-3,3',4',5,7-flavanpentol) is also an advantageous active ingredient for the purposes of the present invention.

Also advantageous are plant extracts with a content of catechins, in particular extracts of green tea, such as e.g. extracts from leaves of plants of the species Camellia spec., very particularly the types of tea Camellia sinenis, C. assamica, C. taliensis and C. irrawadiensis and hybrids of these with, for example, Camellia japonica.

Preferred active ingredients are also polyphenols or catechins from the group (-)-catechin, (+)-catechin, (-)-catechin gallate, (-)-gallocatechin gallate, (+)-epicatechin, (-)-epicatechin, (-)-epicatechin gallate, (-)-epigallocatechin and (-)-epigallocatechin gallate.

Flavone and its derivatives (also often collectively called "flavones") are also advantageous active ingredients for the purposes of the present invention. They are characterized by the following basic structure (substitution positions are shown):

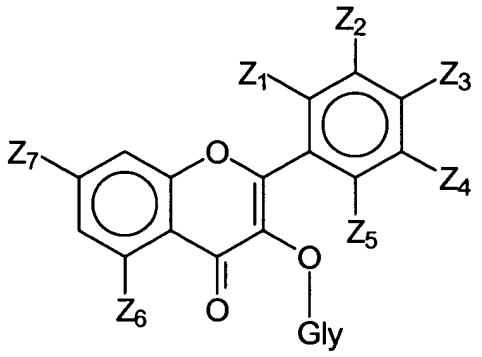


Some of the more important flavones which can also preferably be used in preparations according to the invention are given in the table below:

	OH substitution positions							
	3	5	7	8	2'	3'	4'	5'
Flavone	-	-	-	-	-	-	-	-
Flavonol	+	-	-	-	-	-	-	-
Chrysin	-	+	+	-	-	-	-	-
Galangin	+	+	+	-	-	-	-	-
Apigenin	-	+	+	-	-	-	+	-
Fisetin	+	-	+	-	-	+	+	-
Luteolin	-	+	+	-	-	+	+	-
Kaempferol	+	+	+	-	-	-	+	-
Quercetin	+	+	+	-	-	+	+	-
Morin	+	+	+	-	+	-	+	-
Robinetin	+	-	+	-	-	+	+	+
Gossypetin	+	+	+	+	-	+	+	-
Myricetin	+	+	+	-	-	+	+	+

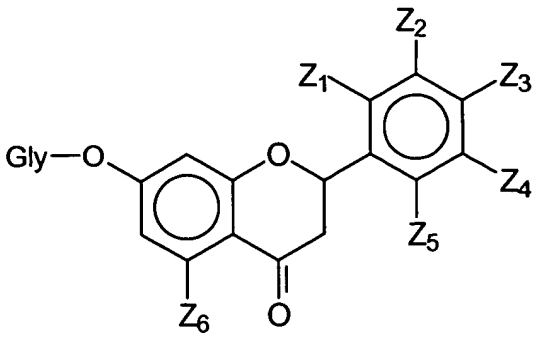
In nature, flavones are usually in glycosylated form.

According to the invention, the flavonoids are preferably chosen from the group of substances of the generic structural formula



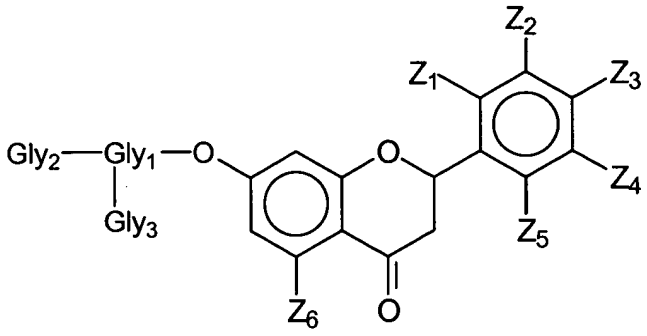
where Z_1 to Z_7, independently of one another, are chosen from the group consisting of H, OH, alkoxy and hydroxyalkoxy, where the alkoxy and hydroxyalkoxy groups can be branched or unbranched and have 1 to 18 carbon atoms, and where Gly is chosen from the group of mono- and oligoglycoside radicals.

According to the invention, the flavonoids can however, also advantageously be chosen from the group of substances of the generic structural formula



where Z_1 to Z_6, independently of one another, are chosen from the group consisting of H, OH, alkoxy and hydroxyalkoxy, where the alkoxy and hydroxyalkoxy groups can be branched or unbranched and have 1 to 18 carbon atoms, and where Gly is chosen from the group of mono and oligoglycoside radicals.

Preferably, such structures can be chosen from the group of substances of the generic structural formula

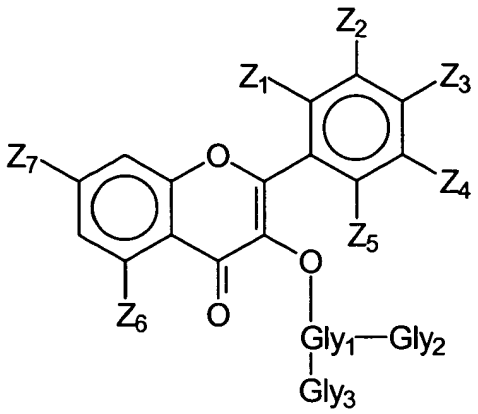


where Gly_1, Gly_2 and Gly_3, independently of one another, are monoglycoside radicals. Gly_2 and Gly_3 can also, individually or together, represent saturations by hydrogen atoms.

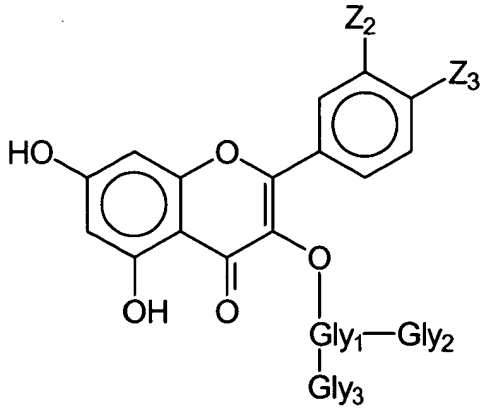
Preferably, Gly_1, Gly_2 and Gly_3, independently of one another, are chosen from the group of hexosyl radicals, in particular of rhamnosyl radicals and glucosyl radicals. However,

other hexosyl radicals, for example allosyl, altrosyl, galactosyl, gulosyl, idosyl, mannosyl and talosyl, can also be used advantageously in some circumstances. It may also be advantageous according to the invention to use pentosyl radicals.

Z_1 to Z_5 are, independently of one another, advantageously chosen from the group consisting of H, OH, methoxy, ethoxy and 2-hydroxyethoxy, and the flavone glycosides have the structure



The flavone glycosides according to the invention are particularly advantageously chosen from the group given by the following structure:



where Gly_1, Gly_2 and Gly_3, independently of one another, are monoglycoside radicals. Gly_2 and Gly_3 can also, individually or together, represent saturations by hydrogen atoms.

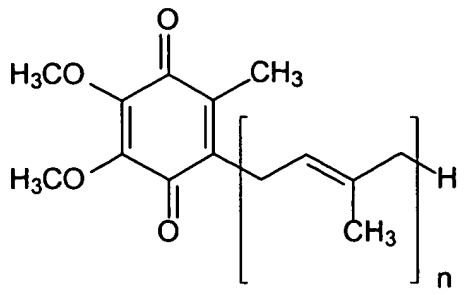
Preferably, Gly_1, Gly_2 and Gly_3, independently of one another, are chosen from the group of hexosyl radicals, in particular of rhamnosyl radicals and glucosyl radicals. However, other hexosyl radicals, for example allosyl, altrosyl, galactosyl, gulosyl, idosyl, mannosyl and talosyl, can also advantageously be used in some circumstances. It may also be advantageous according to the invention to use pentosyl radicals.

For the purposes of the present invention, it is particularly advantageous to choose the flavone glucoside(s) from the group consisting of α-glucosylrutin, α-glucosylmyricetin, α-glucosylisoquercitrin, α-glucosylisoquercetin and α-glucosylquercitrin.

Particular preference is given, according to the invention, to α-glucosylrutin.

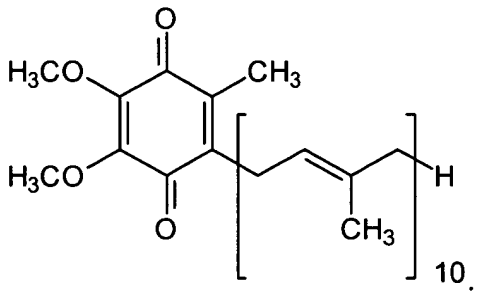
Also advantageous according to the invention are naringin (aurantin, naringenin-7-rhamno-glucoside), hesperidin (3',5,7-trihydroxy-4'-methoxyflavanone-7-rutinoside, hesperidoside, hesperetin-7-O-rutinoside), rutin (3,3',4',5,7-pentahydroxyflavone-3-rutinoside, quercetin-3-rutinoside, sophorin, birutan, rutabion, taurutin, phytomelin, melin), troxerutin (3,5-dihydroxy-3',4',7-tris(2-hydroxyethoxy)flavone-3-(6-O-(6-deoxy-α-L-mannopyranosyl)-β-D-glucopyranoside)), monoxerutin (3,3',4',5-tetrahydroxy-7-(2-hydroxyethoxy)flavone-3-(6-O-(6-deoxy-α-L-mannopyranosyl)-β-D-glucopyranoside)), dihydrorobinetin (3,3',4',5',7-pentahydroxyflavanone), taxifolin (3,3',4',5,7-pentahydroxyflavanone), eriodictyol-7-glucoside (3',4',5,7-tetrahydroxyflavanone-7 glucoside), flavanomarein (3',4',7,8-tetrahydroxyflavanone-7 glucoside) and isoquercetin (3,3',4',5,7-pentahydroxyflavanone-3-(β-D-glucopyranoside).
It is also advantageous to choose the active ingredient(s) from the group of ubiquinones and plastoquinones.

Ubiquinones are distinguished by the structural formula

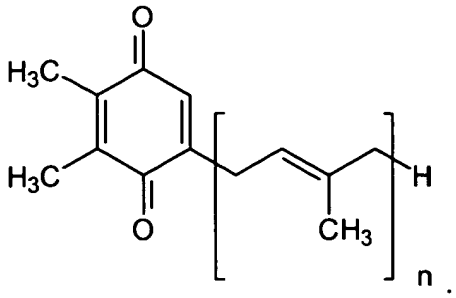


and are the most widespread and thus the most investigated bioquinones. Ubiquinones are referred to depending on the number of isoprene units linked in the side chain as Q-1, Q-2, Q-3 etc., or depending on the number of carbon atoms, as U-5, U-10, U-15 etc. They preferably appear with certain chain lengths, e.g. in some microorganisms and yeasts where n=6. In most mammals including man, Q10 predominates.

Coenzyme Q10 is particularly advantageous and is characterized by the following structural formula:

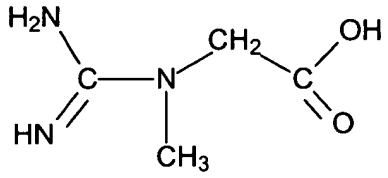


Plastoquinones have the general structural formula



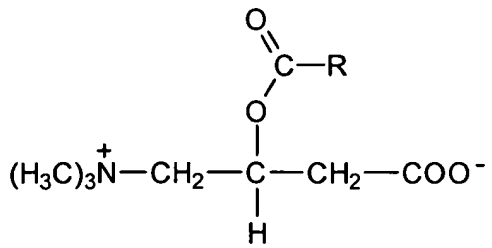
Plastoquinones differ in the number n of isoprene radicals and are referred to accordingly, e.g. PQ-9 (n=9). In addition, other plastoquinones with varying substituents on the quinone ring exist.

Creatine and/or creatine derivatives are preferred active ingredients for the purposes of the present invention. Creatine is characterized by the following structure:



Preferred derivatives are creatine phosphate and creatine sulfate, creatine acetate, creatine ascorbate and the derivatives esterified at the carboxyl group with mono- or polyfunctional alcohols.

A further advantageous active ingredient is L-carnitine [3-hydroxy-4-(trimethylammonio)butyrobetaine]. Acylcarnitine chosen from the group of substances of the following general structural formula



where R is chosen from the group of branched and unbranched alkyl radicals having up to 10 carbon atoms, are advantageous active ingredients for the purposes of the present invention. Preference is given to propionylcarnitine and, in particular, acetylcarnitine. Both enantiomers (D and L form) are to be used advantageously for the purposes of the present invention. It may also be advantageous to use any enantiomer mixtures, for example a racemate of D and L form.

Further advantageous active ingredients are sericoside, pyridoxol, vitamin K, biotin and aroma substances.

The list of said active ingredients and active ingredient combinations which can be used in the preparations according to the invention is, of course, not intended to be limiting. The active ingredients can be used individually or in any combinations with one another.

Skin aging is caused e.g. by endogenous, genetically determined factors. As a result of aging, the epidermis and dermis experience e.g. the following structural damage and functional disorders, which can also be covered by the term "senile xerosis":

a) dryness, roughness and formation of (dryness) wrinkles,
b) itching and
c) reduced refatting by sebaceous glands (e.g. after washing).

Exogenous factors, such as UV light and chemical noxae, can have a cumulative effect and, for example, accelerate or add to the endogenous aging processes. The epidermis and dermis experience, in particular as a result of exogenous factors, e.g. the following structural damage and functional disorders in the skin, which go beyond the degree and quality of the damage in the case of chronological aging:

d) visible vascular dilations (telangiectases, cuperosis);
e) flaccidity and formation of wrinkles;
f) local hyperpigmentation, hypopigmentation and abnormal pigmentation (e.g. age spots) and
g) increased susceptibility to mechanical stress (e.g. cracking).

Surprisingly, selected formulations according to the invention can also have an antiwrinkle action or considerably increase the action of known antiwrinkle active ingredients. Accordingly, for the purposes of the invention, formulations are particularly advantageously suitable for the prophylaxis and treatment of cosmetic or dermatological skin changes, as arise, for example, during skin aging. They are also advantageously suitable for combating the development of dry or rough skin.

In a particular embodiment, the present invention thus relates to products for the care of skin aged in a natural manner, and for the treatment of the secondary damage of light aging, in particular the phenomena listed under a) to g).

The water phase of the preparations according to the invention can advantageously comprise customary cosmetic auxiliaries, such as, for example, alcohols, in particular those of low carbon number, preferably ethanol and/or isopropanol, diols or polyols of low carbon number, and ethers thereof, preferably propylene glycol, glycerol, ethylene glycol, ethylene glycol monoethyl or monobutyl ether, propylene glycol monomethyl, monoethyl or monobutyl ether, diethyleneglycol monomethyl or monoethyl ether and analogous products, polymers, foam stabilizers, electrolytes and moisturizers.

Moisturizers is the term used to describe substances or mixtures of substances which, following application or distribution on the surface of the skin, confer on cosmetic or dermatological preparations the property of reducing the moisture loss by the horny layer (also called transepidermal water loss (TEWL)) and/or have a beneficial effect on the hydration of the horny layer.

Advantageous moisturizers for the purposes of the present invention are, for example, glycerol, lactic acid, pyrrolidonecarboxylic acid and urea. In addition, it is particularly advantageous to use polymeric moisturizers from the group of polysaccharides which are soluble in water and/or swellable in water and/or gellable using water. Particularly advantageous are, for example, hyaluronic acid, chitosan and/or a fucose-rich polysaccharide which is listed in Chemical Abstracts under the registry number 178463-23-5 and is available, for example, under the name Fucogel®1000 from SOLABIA S.A.

The cosmetic and dermatological preparations according to the invention can comprise dyes and/or color pigments, particularly when they are in the form of decorative cosmetics. The dyes and color pigments can be chosen from the corresponding positive list of the Cosmetics Directive or the EC list of cosmetic colorants. In most cases they are identical to the dyes approved for foods. Advantageous color pigments are, for example, titanium dioxide, mica, iron oxides (e.g. Fe_2O_3, Fe_3O_4, FeO(OH)) and/or tin oxide. Advantageous dyes are, for example, carmine, Berlin blue, chrome oxide green, ultramarine blue and/or manganese violet. It is particularly advantageous to choose the dyes and/or color pigments from the following list. The Colour Index Numbers (CIN) are taken from the *Rowe Colour Index, 3rd Edition, Society of Dyers and Colourists, Bradford, England, 1971*.

Chemical or other name	**CIN**	**Color**
Pigment Green	10006	green
Acid Green 1	10020	green
2,4-Dinitrohydroxynaphthalene-7-sulfonic acid	10316	yellow
Pigment Yellow 1	11680	yellow
Pigment Yellow 3	11710	yellow
Pigment Orange 1	11725	orange
2,4-Dihydroxyazobenzene	11920	orange
Solvent Red 3	12010	red
1-(2'-Chloro-4'-nitro-1'-phenylazo)-2-hydroxynaphthalene	12085	red
Pigment Red 3	12120	red
Ceres red; Sudan red; Fat Red G	12150	red
Pigment Red 112	12370	red
Pigment Red 7	12420	red
Pigment Brown 1	12480	brown
4-(2'-Methoxy-5'-sulfodiethylamido-1'-phenylazo)-3-hydroxy-5"-chloro-2",4"-dimethoxy-2-naphthanilide	12490	red
Disperse Yellow 16	12700	yellow
1-(4-Sulfo-1-phenylazo)-4-aminobenzene-5-sulfonic acid	13015	yellow
2,4-Dihydroxyazobenzene-4'-sulfonic acid	14270	orange
2-(2,4-Dimethylphenylazo-5-sulfo)-1-hydroxynaphthalene-4-sulfonic acid	14700	red
2-(4-Sulfo-1-naphthylazo)-1-naphthol-4-sulfonic acid	14720	red
2-(6-Sulfo-2,4-xylylazo)-1-naphthol-5-sulfonic acid	14815	red
1-(4'-Sulfophenylazo)-2-hydroxynaphthalene	15510	orange
1-(2-Sulfo-4-chloro-5-carboxy-1-phenylazo)-2-hydroxynaphthalene	15525	red
1-(3-Methylphenylazo-4-sulfo)-2-hydroxynaphthalene	15580	red
1-(4',(8')-Sulfonaphthylazo)-2-hydroxynaphthalene	15620	red
2-Hydroxy-1,2'-azonaphthalene-1'-sulfonic acid	15630	red
3-Hydroxy-4-phenylazo-2-naphthylcarboxylic acid	15800	red
1-(2-Sulfo-4-methyl-1-phenylazo)-2-naphthylcarboxylic acid	15850	red

Chemical name	CIN	Color
1-(2-Sulfo-4-methyl-5-chloro-1-phenylazo)-2-hydroxynaphthalene-3-carboxylic acid	15865	red
1-(2-Sulfo-1-naphthylazo)-2-hydroxynaphthalene-3-carboxylic acid	15880	red
1-(3-Sulfo-1-phenylazo)-2-naphthol-6-sulfonic acid	15980	orange
1-(4-Sulfo-1-phenylazo)-2-naphthol-6-sulfonic acid	15985	yellow
Allura Red	16035	red
1-(4-Sulfo-1-naphthylazo)-2-naphthol-3,6-disulfonic acid	16185	red
Acid Orange 10	16230	orange
1-(4-Sulfo-1-naphthylazo)-2-naphthol-6,8-disulfonic acid	16255	red
1-(4-Sulfo-1-naphthylazo)-2-naphthol-3,6,8-trisulfonic acid	16290	red
8-Amino-2-phenylazo-1-naphthol-3,6-disulfonic acid	17200	red
Acid Red 1	18050	red
Acid Red 155	18130	red
Acid Yellow 121	18690	yellow
Acid Red 180	18736	red
Acid Yellow 11	18820	yellow
Acid Yellow 17	18965	yellow
4-(4-Sulfo-1-phenylazo)-1-(4-sulfophenyl)-5-hydroxy-pyrazolone-3-carboxylic acid	19140	yellow
Pigment Yellow 16	20040	yellow
2,6-(4'-Sulfo-2", 4"-dimethyl)bisphenylazo)-1,3-dihydroxybenzene	20170	orange
Acid Black 1	20470	black
Pigment Yellow 13	21100	yellow
Pigment Yellow 83	21108	yellow
Solvent Yellow	21230	yellow
Acid Red 163	24790	red
Acid Red 73	27290	red
2-[4'-(4"-Sulfo-1"-phenylazo)-7'-sulfo-1'-naphthylazo]-1-hydroxy-7-aminonaphthalene-3,6-disulfonic acid	27755	black
4'-[(4"-Sulfo-1"-phenylazo)-7'-sulfo-1'-naphthylazo]-1-hydroxy-8-acetylaminonaphthalene-3,5-disulfonic acid	28440	black
Direct Orange 34, 39, 44, 46, 60	40215	orange
Food Yellow	40800	orange
trans-ß-Apo-8'-carotinaldehyde (C_{30})	40820	orange
trans-Apo-8'-carotinic acid (C_{30})-ethyl ester	40825	orange
Canthaxanthin	40850	orange
Acid Blue 1	42045	blue
2,4-Disulfo-5-hydroxy-4'-4"-bis(diethylamino)triphenylcarbinol	42051	blue
4-[(4-N-Ethyl-p-sulfobenzylamino)phenyl(4-hydroxy-2-sulfophenyl)(methylene)-1-(N-ethyl-N-p-sulfobenzyl)-2,5-cyclohexadienimine]	42053	green
Acid Blue 7	42080	blue
(N-Ethyl-p-sulfobenzylamino)phenyl(2-sulfophenyl)methylene-(N-ethyl-N-p-sulfobenzyl)$\Delta^{2,5}$-cyclohexadienimine	42090	blue
Acid Green 9	42100	green

Chemical r other nam	CIN	Col r
Diethyldisulfobenzyl-di-4-amino-2-chloro-di-2-methyl-fuchsonimmonium	42170	green
Basic Violet 14	42510	violet
Basic Violet 2	42520	violet
2'-Methyl-4'-(N-ethyl-N-m-sulfobenzyl)amino-4"-(N-diethyl)amino-2-methyl-N-ethyl-N-m-sulfobenzylfuchsonimmonium	42735	blue
4'-(N-Dimethyl)amino-4"-(N-phenyl)aminonaphtho-N-dimethyl-fuchsonimmonium	44045	blue
2-Hydroxy-3,6-disulfo-4,4'-bisdimethylaminonaphtho-fuchsonimmonium	44090	green
Acid Red 52	45100	red
3-(2'-Methylphenylamino)-6-(2'-methyl-4'-sulfophenylamino)-9-(2"-carboxyphenyl)xanthenium salt	45190	violet
Acid Red 50	45220	red
Phenyl-2-oxyfluorone-2-carboxylic acid	45350	yellow
4,5-Dibromofluorescein	45370	orange
2,4,5,7-Tetrabromofluorescein	45380	red
Solvent Dye	45396	orange
Acid Red 98	45405	red
3',4',5',6'-Tetrachloro-2,4,5,7-tetrabromofluorescein	45410	red
4,5-Diiodofluorescein	45425	red
2,4,5,7-Tetraiodofluorescein	45430	red
Quinophthalone	47000	yellow
Quinophthalonedisulfonic acid	47005	yellow
Acid Violet 50	50325	violet
Acid Black 2	50420	black
Pigment Violet 23	51319	violet
1,2-Dioxyanthraquinone, calcium-aluminum complex	58000	red
3-Oxypyrene-5,8,10-sulfonic acid	59040	green
1-Hydroxy-4-N-phenylaminoanthraquinone	60724	violet
1-Hydroxy-4-(4'-methylphenylamino)anthraquinone	60725	violet
Acid Violet 23	60730	violet
1,4-Di(4'-methylphenylamino)anthraquinone	61565	green
1,4-Bis(o-sulfo-p-toluidino)anthraquinone	61570	green
Acid Blue 80	61585	blue
Acid Blue 62	62045	blue
N,N'-Dihydro-1,2,1',2'-anthraquinone azine	69800	blue
Vat Blue 6; Pigment Blue 64	69825	blue
Vat Orange 7	71105	orange
Indigo	73000	blue
Indigo-disulfonic acid	73015	blue
4,4'-Dimethyl-6,6'-dichlorothioindigo	73360	red
5,5'-Dichloro-7,7'-dimethylthioindigo	73385	violet
Quinacridone Violet 19	73900	violet
Pigment Red 122	73915	red
Pigment Blue 16	74100	blue
Phthalocyanine	74160	blue

Chemical r oth r name	CIN	Col r
Direct Blue 86	74180	blue
Chlorinated phthalocyanine	74260	green
Natural Yellow 6,19; Natural Red 1	75100	yellow
Bixin, Norbixin	75120	orange
Lycopene	75125	yellow
trans-alpha-, beta- and gamma-carotene	75130	orange
Keto- and/or hydroxyl derivates of carotene	75135	yellow
Guanine or pearlescent agent	75170	white
1,7-Bis(4-hydroxy-3-methoxyphenyl)-1,6-heptadiene-3,5-dione	75300	yellow
Complex salt (Na, Al, Ca) of carminic acid	75470	red
Chlorophyll a and b; copper compounds of chlorophylls and chlorophyllins	75810	green
Aluminum	77000	white
Hydrated alumina	77002	white
Hydrous aluminum silicates	77004	white
Ultramarine	77007	blue
Pigment Red 101 and 102	77015	red
Barium sulfate	77120	white
Bismuth oxychloride and its mixtures with mica	77163	white
Calcium carbonate	77220	white
Calcium sulfate	77231	white
Carbon	77266	black
Pigment black 9	77267	black
Carbo medicinalis vegetabilis	77268:1	black
Chromium oxide	77288	green
Chromium oxide, hydrous	77289	green
Pigment Blue 28, Pigment Green 14	77346	green
Pigment Metal 2	77400	brown
Gold	77480	brown
Iron oxides and hydroxides	77489	orange
Iron oxide	77491	red
Hydrated iron oxide	77492	yellow
Iron oxide	77499	black
Mixtures of iron (II) and iron(III)hexacyanoferrate	77510	blue
Pigment White 18	77713	white
Manganese ammonium diphosphate	77742	violet
Manganese phosphate; $Mn_3(PO_4)_2 \cdot 7\ H_20$	77745	red
Silver	77820	white
Titanium dioxide and its mixtures with mica	77891	white
Zinc oxide	77947	white
6,7-Dimethyl-9-(1'-D-ribityl)isoalloxazine, lactoflavine		yellow
Sugar coloring		brown
Capsanthin, capsorubin		orange
Betanin		red
Benzopyrylium salts, anthocyans		red
Aluminum, zinc, magnesium and calcium stearate		white
Bromothymol blue		blue
Bromocresol green		green
Acid Red 195		red

If the formulations according to the invention are in the form of products, which are intended for use in the facial area, it is favorable to choose one or more substances from the following group as the dye: 2,4-dihydroxyazobenzene, 1-(2'-chloro-4'-nitro-1'-phenylazo)-2-hydroxynaphthalene, Ceres Red, 2-(4-sulfo-1-naphthylazo)-1-naphthol-4-sulfonic acid, calcium salt of 2-hydroxy-1,2'-azonaphthalene-1'-sulfonic acid, calcium and barium salts of 1-(2-sulfo-4-methyl-1-phenylazo)-2-naphthylcarboxylic acid, calcium salt of 1-(2-sulfo-1-naphthylazo)-2-hydroxynaphthalene-3-carboxylic acid, aluminum salt of 1-(4-sulfo-1-phenylazo)-2-naphthol-6-sulfonic acid, aluminum salt of 1-(4-sulfo-1-naphthylazo)-2-naphthol-3,6-disulfonic acid, 1-(4-sulfo-1-naphthylazo)-2-naphthol-6,8-disulfonic acid, aluminum salt of 4-(4-sulfo-1-phenylazo)-1-(4-sulfophenyl)-5-hydroxypyrazolone-3-carboxylic acid, aluminum and zirconium salts of 4,5-dibromofluorescein, aluminum and zirconium salts of 2,4,5,7-tetrabromofluorescein, 3',4',5',6'-tetrachloro-2,4,5,7-tetrabromofluorescein and its aluminum salt, aluminum salt of 2,4,5,7-tetraiodofluorescein, aluminum salt of quinophthalone disulfonic acid, aluminum salt of indigo disulfonic acid, red and black iron oxide (CIN: 77 491 (red) and 77 499 (black)), iron oxide hydrate (CIN: 77 492), manganese ammonium diphosphate and titanium dioxide.

Also advantageous are oil-soluble natural dyes, such as, for example, paprika extracts, ß-carotene or cochenille.

Also advantageous for the purposes of the present invention are formulations with a content of pearlescent pigments. Preference is given in particular to the types of pearlescent pigments listed below:

1. Natural pearlescent pigments, such as, for example
   - "pearl essence" (guanine/hypoxanthin mixed crystals from fish scales) and
   - "mother of pearl" (ground mussel shells)
2. Monocrystalline pearlescent pigments, such as, for example, bismuth oxychloride (BiOCl)
3. Layer-substrate pigments: e.g. mica/metal oxide

Bases for pearlescent pigments are, for example, pulverulent pigments or castor oil dispersions of bismuth oxychloride and/or titanium dioxide, and bismuth oxychloride

and/or titanium dioxide on mica. The luster pigment listed under CIN 77163, for example, is particularly advantageous.

Also advantageous are, for example, the following types of pearlescent pigment based on mica/metal oxide:

Group	Coating/layer thickness	Color
Silver-white pearlescent pigments	TiO_2: 40 – 60 nm	Silver
Interference pigments	TiO_2: 60 – 80 nm	Yellow
	TiO_2: 80 – 100 nm	Red
	TiO_2: 100 – 140 nm	Blue
	TiO_2: 120 – 160 nm	Green
Color luster pigments	Fe_2O_3	Bronze
	Fe_2O_3	Copper
	Fe_2O_3	Red
	Fe_2O_3	Red-violet
	Fe_2O_3	Red-green
	Fe_2O_3	Black
Combination pigments	TiO_2 / Fe_2O_3	Gold shades
	TiO_2 / Cr_2O_3	Green
	TiO_2 / Berlin blue	Deep blue
	TiO_2 / carmine	Red

Particular preference is given, for example, to the pearlescent pigments obtainable from Merck under the trade names Timiron, Colorona or Dichrona.

The list of given pearlescent pigments is not of course intended to be limiting. Pearlescent pigments which are advantageous for the purposes of the present invention are obtainable by numerous methods known per se. For example, other substrates apart from mica can be coated with further metal oxides, such as, for example, silica and the like. SiO_2 particles coated with, for example, TiO_2 and Fe_2O_3 ("ronaspheres"), which are marketed by Merck and are particularly suitable for the optical reduction of fine lines.

It can moreover be advantageous to dispense completely with a substrate such as mica. Particular preference is given to iron pearlescent pigments prepared without the use of mica. Such pigments are obtainable, for example, under the trade name Sicopearl Kupfer 1000 from BASF.

In addition, also particularly advantageous are effect pigments which are obtainable under the trade name Metasome Standard/Glitter in various colors (yellow, red, green, blue) from Flora Tech. The glitter particles are present here in mixtures with various auxiliaries and dyes (such as, for example, the dyes with the Colour Index (CI) Numbers 19140, 77007, 77289, 77491).

The dyes and pigments may be present either individually or in a mixture, and can be mutually coated with one another, different coating thicknesses generally giving rise to different color effects. The total amount of dyes and color-imparting pigments is advantageously chosen from the range from e.g. 0.1% by weight to 30% by weight, preferably from 0.5 to 15% by weight, in particular from 1.0 to 10% by weight, in each case based on the total weight of the preparations.

For the purposes of the present invention, it is also advantageous to provide cosmetic and dermatological preparations whose main purpose is not protection against sunlight, but which nevertheless have a content of UV protection substances. Thus, for example, UV-A and/or UV-B filter substances are usually incorporated into day creams or make-up products. UV protection substances, like antioxidants, and, if desired, preservatives, also constitute effective protection of the preparations themselves against spoilage. Also favorable are cosmetic and dermatological preparations in the form of a sunscreen.

Accordingly, for the purposes of the present invention, as well as comprising one or more UV filter substances according to the invention, the preparations additionally comprise at least one further UV-A and/or UV-B filter substance. The formulations may, although not necessarily, optionally also comprise one or more organic and/or inorganic pigments as UV filter substances which may be present in the water and/or oil phase.

Preferred inorganic pigments are metal oxides and/or other metal compounds which are insoluble or virtually insoluble in water, in particular oxides of titanium (TiO_2), zinc (ZnO), iron (e.g. Fe_2O_3), zirconium (ZrO_2), silicon (SiO_2), manganese (e.g. MnO), aluminum (Al_2O_3), cerium (e.g. Ce_2O_3), mixed oxides of the corresponding metals and mixtures of such oxides.

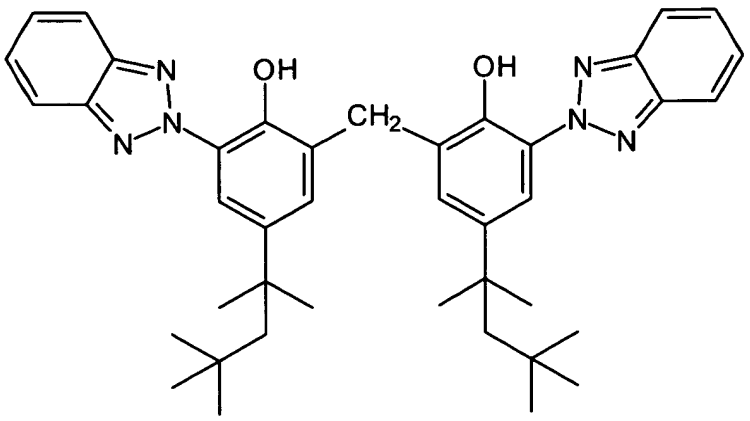
For the purposes of the present invention, such pigments may advantageously be surface-treated ("coated"), the intention being to form or retain, for example, an amphiphilic or hydrophobic character. This surface treatment can consist in providing the pigments with a thin hydrophobic layer by processes known per se.

Advantageous according to the invention are e.g. titanium dioxide pigments which have been coated with octylsilanol. Suitable titanium dioxide particles are available under the trade name T805 from Degussa. Also particularly advantageous are TiO_2 pigments coated with aluminum stearate, e.g. those available under the trade name MT 100 T from TAYCA.

A further advantageous coating of the inorganic pigments consists of dimethylpolysiloxane (also: dimethicone), a mixture of completely methylated, linear siloxane polymers which have been terminally blocked with trimethylsiloxy units. Particularly advantageous for the purposes of the present invention are zinc oxide pigments which have been coated in this way.

Also advantageous is a coating of the inorganic pigments with a mixture of dimethylpolysiloxane, in particular dimethylpolysiloxane having an average chain length of from 200 to 350 dimethylsiloxane units, and silica gel, which is also referred to as simethicone. In particular, it is advantageous for the inorganic pigments to be additionally coated with aluminum hydroxide or aluminum oxide hydrate (also: alumina, CAS No.: 1333-84-2). Particularly advantageous are titanium dioxides which have been coated with simethicone and alumina, it also being possible for the coating to comprise water. An example thereof is the titanium dioxide available under the trade name Eusolex T2000 from Merck.

An advantageous organic pigment for the purposes of the present invention is 2,2'-methylenebis(6-(2H-benzotriazol-2-yl)-4-(1,1,3,3-tetramethylbutyl)phenol) [INCI: bisoctyltriazole], which is characterized by the chemical structural formula

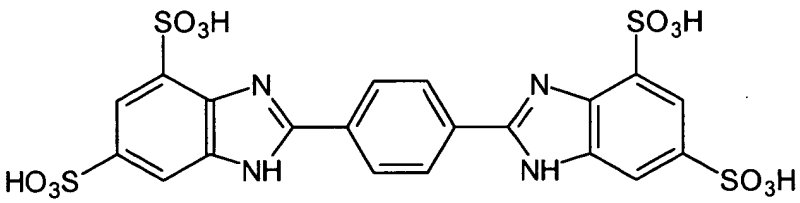


and is available under the trade name Tinosorb® M from CIBA-Chemikalien GmbH.

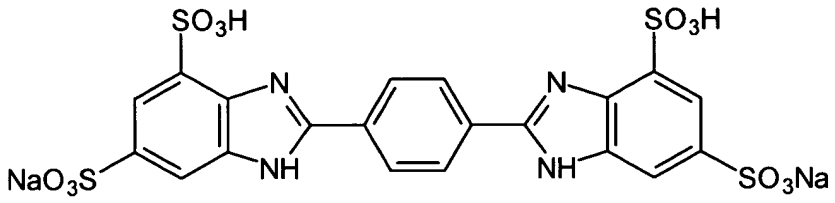
Preparations according to the invention advantageously comprise substances which absorb UV radiation in the UV-A and/or UV-B range, the total amount of filter substances being, for example, from 0.1% by weight to 30% by weight, preferably from 0.5 to 20% by weight, in particular from 1.0 to 15% by weight, based on the total weight of the preparations, in order to provide cosmetic preparations which protect the hair and the skin from the entire range of ultraviolet radiation. They can also be used as sunscreens for the hair or the skin.

Advantageous UV-A filter substances for the purposes of the present invention are dibenzoylmethane derivatives, in particular 4-(tert-butyl)-4'-methoxydibenzoylmethane (CAS No. 70356-09-1), which is sold by Givaudan under the name Parsol® 1789 and by Merck under the trade name Eusolex® 9020.

Further advantageous UV-A filter substances are phenylene-1,4-bis(2-benzimidazyl)-3,3'-5,5'-tetrasulfonic acid:

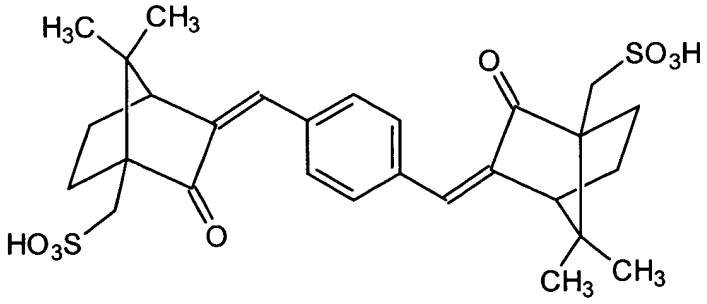


and its salts, particularly the corresponding sodium, potassium or triethanolammonium salts, in particular phenylene-1,4-bis(2-benzimidazyl)-3,3'-5,5'-tetrasulfonic bis-sodium salt:



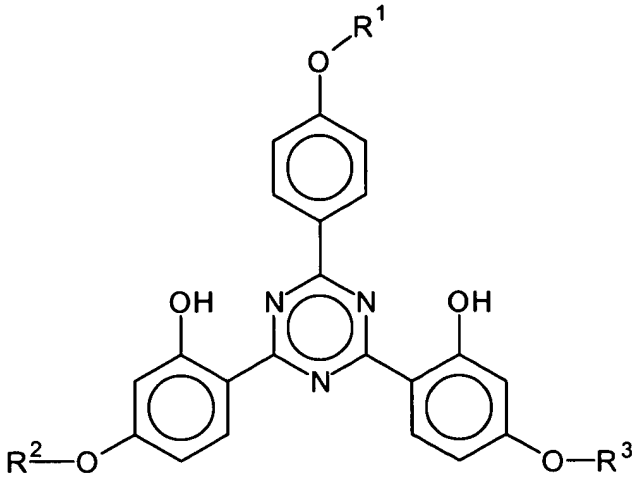
with the INCI name Bisimidazylate, which is available, for example, under the trade name Neo Heliopan AP from Haarmann & Reimer.

Also advantageous are 1,4-di(2-oxo-10-sulfo-3-bornylidenemethyl)benzene and salts thereof (in particular the corresponding 10-sulfato compounds, in particular the corresponding sodium, potassium or triethanolammonium salt), which is also referred to as benzene-1,4-di(2-oxo-3-bornylidenemethyl-10-sulfonic acid) and is characterized by the following structure:



Advantageous UV filter substances for the purposes of the present invention are also broad-band filters, i.e. filter substances which absorb both UV-A and also UV-B radiation.

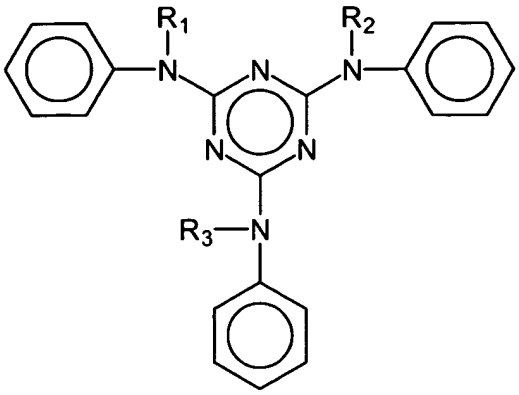
Advantageous broad-band filters or UV-B filter substances are, for example, bisresorcinyltriazine derivatives having the following structure:



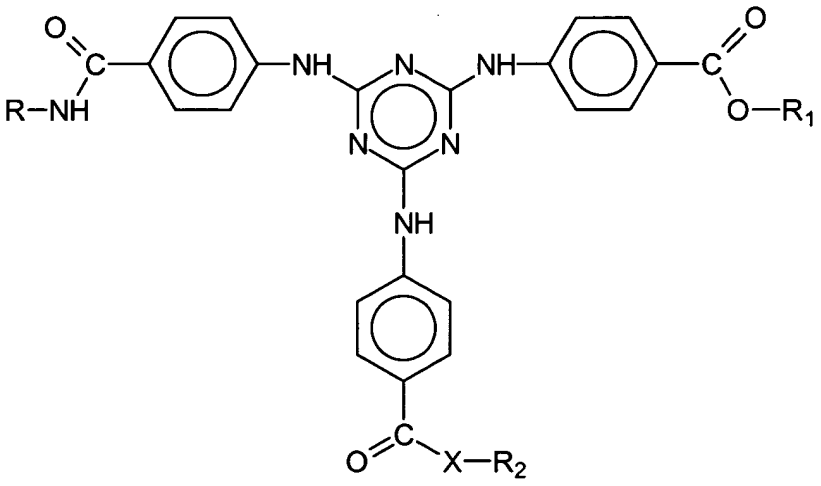
where R^1, R^2 and R^3 independently of one another are chosen from the group of branched and unbranched alkyl groups having 1 to 10 carbon atoms, or are a single hydrogen atom. Particular preference is given to 2,4-bis{[4-(2-ethylhexyloxy)-2-hydroxy]phenyl}-6-(4-methoxyphenyl)-1,3,5-triazine (INCI: Aniso Triazine), which is available under the trade name Tinosorb® S from CIBA-Chemikalien GmbH

For the purposes of the present invention, particularly advantageous preparations which are characterized by high or very high UV-A protection preferably comprise two or more UV-A and/or broadband filters, in particular dibenzoylmethane derivatives [for example 4-(tert-butyl)-4'-methoxydibenzoylmethane], benzotriazole derivatives [for example 2,2'-methylenebis(6-(2H-benzotriazol-2-yl)-4-(1,1,3,3-tetramethylbutyl)phenol)], phenylene-1,4-bis(2-benzimidazyl)-3,3'-5,5'-tetrasulfonic acid and/or its salts, 1,4-di(2-oxo-10-sulfo-3-bornylidenemethyl)benzene and/or salts thereof and/or 2,4-bis{[4-(2-ethylhexyloxy)-2-hydroxy]phenyl}-6-(4-methoxyphenyl)-1,3,5-triazine, in each case individually or in any combinations with one another.

Other UV filter substances, which have the structural formula



are also advantageous UV filter substances for the purposes of the present invention, for example the s-triazine derivatives described in european laid-open specification EP 570 838 A1, whose chemical structure is expressed by the generic formula

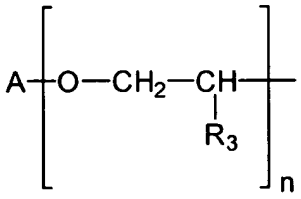


where

R is a branched or unbranched C_1-C_{18}-alkyl radical, a C_5-C_{12}-cycloalkyl radical, optionally substituted with one or more C_1-C_4-alkyl groups,

X is an oxygen atom or an NH group,

R_1 is a branched or unbranched C_1-C_{18}-alkyl radical, a C_5-C_{12}-cycloalkyl radical, optionally substituted by one or more C_1-C_4-alkyl groups, or a hydrogen atom, an alkali metal atom, an ammonium group or a group of the formula



in which

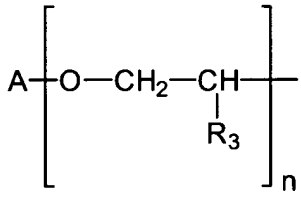
A is a branched or unbranched C_1-C_{18}-alkyl radical, a C_5-C_{12}-cycloalkyl or aryl radical, optionally substituted by one or more C_1-C_4-alkyl groups,

R_3 is a hydrogen atom or a methyl group,

n is a number from 1 to 10,

R_2 is a branched or unbranched C_1-C_{18}-alkyl radical, a C_5-C_{12}-cycloalkyl radical, optionally substituted by one or more C_1-C_4-alkyl groups, when X is the NH group, and

a branched or unbranched C_1-C_{18}-alkyl radical, a C_5-C_{12}-cycloalkyl radical, optionally substituted by one or more C_1-C_4-alkyl groups, or a hydrogen atom, an alkali metal atom, an ammonium group or a group of the formula



in which

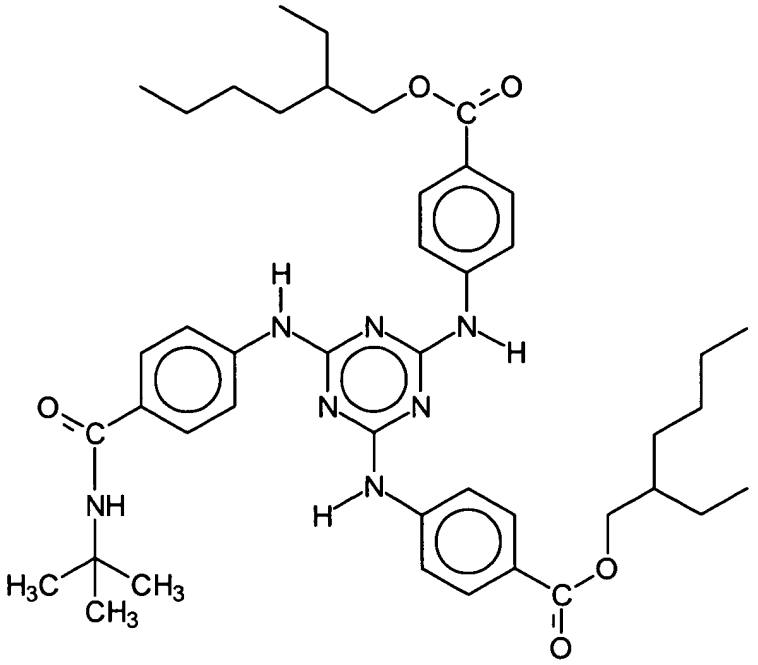
A is a branched or unbranched C_1-C_{18}-alkyl radical, a C_5-C_{12}-cycloalkyl or aryl radical, optionally substituted by one or more C_1-C_4-alkyl groups,

R_3 is a hydrogen atom or a methyl group,

n is a number from 1 to 10,

when X is an oxygen atom.

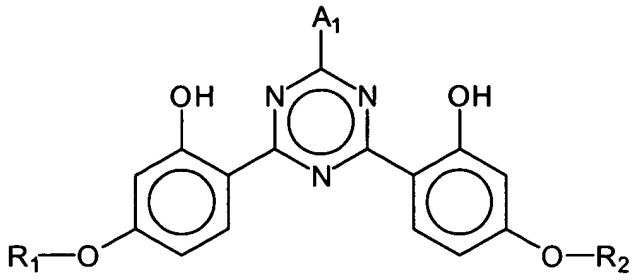
A particularly preferred UV filter substance for the purposes of the present invention is also an unsymmetrically substituted s-triazine, the chemical structure of which is expressed by the formula



and which is also referred to below as dioctylbutylamidotriazone, (INCI) and is available under the trade name UVASORB HEB from Sigma 3V.

Also advantageous for the purposes of the present invention is a symmetrically substituted s-triazine, tris(2-ethylhexyl) 4,4',4''-(1,3,5-triazine-2,4,6-triyltriimino)trisbenzoate, synonym: 2,4,6-tris[anilino-(p-carbo-2'-ethyl-1'-hexyloxy)]-1,3,5-triazine (INCI: Octyl Triazone), which is marketed by BASF Aktiengesellschaft under the trade name UVINUL® T 150.

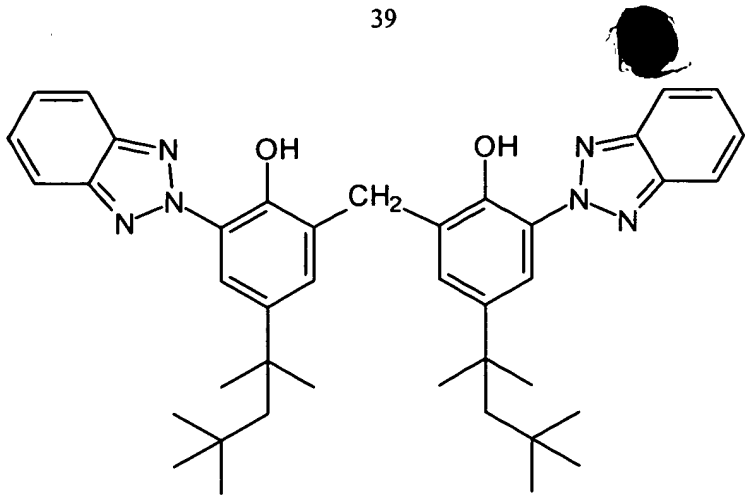
European laid-open specification 775 698 also describes preferred bisresorcinyltriazine derivatives, the chemical structure of which is expressed by the generic formula



where R_1 , R_2 and A_1 represent very different organic radicals.

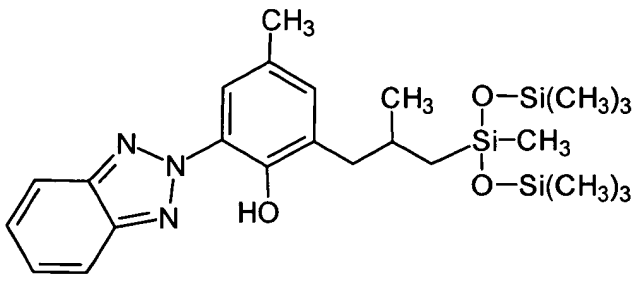
Also advantageous for the purposes of the present invention are 2,4-bis{[4-(3-sulfonato)-2-hydroxypropyloxy)-2-hydroxy]phenyl}-6-(4-methoxyphenyl)-1,3,5-triazine sodium salt, 2,4-bis{[4-(3-(2-propyloxy)-2-hydroxypropyloxy)-2-hydroxy]phenyl}-6-(4-methoxyphenyl)-1,3,5-triazine, 2,4-bis{[4-(2-ethylhexyloxy)-2-hydroxy]phenyl}-6-[4-(2-methoxyethylcarboxyl)phenylamino]-1,3,5-triazine, 2,4-bis{[4-(3-(2-propyloxy)-2-hydroxypropyloxy)-2-hydroxy]phenyl}-6-[4-(2-ethylcarboxyl)phenylamino]-1,3,5-triazine, 2,4-bis{[4-(2-ethylhexyloxy)-2-hydroxy]phenyl}-6-(1-methylpyrrol-2-yl)-1,3,5-triazine, 2,4-bis{[4-tris(trimethylsiloxysilylpropyloxy)-2-hydroxy]phenyl}-6-(4-methoxyphenyl)-1,3,5-triazine, 2,4-bis{[4-(2"-methylpropenyloxy)-2-hydroxy]phenyl}-6-(4-methoxyphenyl)-1,3,5-triazine and 2,4-bis{[4-(1',1',1',3',5',5',5'-heptamethylsiloxy-2"-methylpropyloxy)-2-hydroxy]phenyl}-6-(4-methoxyphenyl)-1,3,5-triazine.

An advantageous broad-band filter for the purposes of the present invention is 2,2'-methylenebis(6-(2H-benzotriazol-2-yl)-4-(1,1,3,3-tetramethylbutyl)phenol), which is characterized by the chemical structural formula



and is available under the trade name Tinosorb® M from CIBA-Chemikalien GmbH.

Another advantageous broad-band filter for the purposes of the present invention is 2-(2H-benzotriazol-2-yl)-4-methyl-6-[2-methyl-3-[1,3,3,3-tetramethyl-1-[(trimethylsilyl)oxy]disiloxanyl]propyl]phenol (CAS No.: 155633-54-8) having the INCI name Drometrizole Trisiloxane, which is characterized by the chemical structural formula



The UV-B and/or broad-band filters can be oil-soluble or water-soluble. Examples of advantageous oil-soluble UV-B and/or broad-band filter substances are:

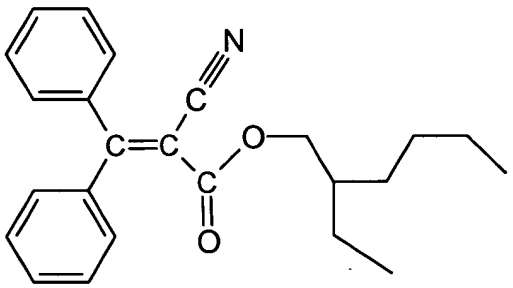
- 3-benzylidenecamphor derivatives, preferably 3-(4-methylbenzylidene)camphor, 3-benzylidenecamphor;

- 4-aminobenzoic acid derivatives, preferably 2-ethylhexyl 4-(dimethylamino)benzoate, amyl 4-(dimethylamino)benzoate;
- 2,4,6-trianilino(p-carbo-2'-ethyl-1'-hexyloxy)-1,3,5-triazine;
- esters of benzalmalonic acid, preferably di(2-ethylhexyl) 4-methoxybenzalmalonate,
- esters of cinnamic acid, preferably 2-ethylhexyl 4-methoxycinnamate, isopentyl 4-methoxycinnamate;
- derivates of benzophenone, preferably 2-hydroxy-4-methoxybenzophenone, 2-hydroxy-4-methoxy-4'-methylbenzophenone, 2,2'-dihydroxy-4-methoxybenzophenone
- and UV filters bonded to polymers.

Examples of advantageous water-soluble UV-B and/or broad-band filter substances are:

- salts of 2-phenylbenzimidazole-5-sulfonic acid, such as its sodium, potassium or its triethanolammonium salt, and also the sulfonic acid itself;
- sulfonic acid derivatives of 3-benzylidenecamphor, such as, for example, 4-(2-oxo-3-bornylidenemethyl) benzenesulfonic acid, 2-methyl-5-(2-oxo-3-bornylidenemethyl)sulfonic acid and salts thereof.

A further light protection filter substance which can be used advantageously according to the invention is ethylhexyl 2-cyano-3,3-diphenylacrylate (octocrylene), which is available from BASF under the name Uvinul® N 539 and is characterized by the following structure:



It can also be of considerable advantage to use polymer-bonded or polymeric UV filter substances in the preparations according to the present invention, in particular those described in WO-A-92/20690.

In some instances, it can also be advantageous to incorporate further UV-A and/or UV-B filters in accordance with the invention into cosmetic or dermatological preparations, for example certain salicylic acid derivatives, such as 4-isopropylbenzyl salicylate, 2-ethylhexyl salicylate (= octyl salicylate), homomenthyl salicylate.

The list of given UV filters which can be used for the purposes of the present invention is, of course, not intended to be limiting.

The preparations according to the invention advantageously comprise the substances which absorb UV radiation in the UV-A and/or UV-B region in a total amount of, for example, 0.1% by weight to 30% by weight, preferably 0.5 to 20% by weight, in particular 1.0 to 15.0% by weight, in each case based on the total weight of the preparations, in order to provide cosmetic preparations which protect the hair or the skin from the entire range of ultraviolet radiation. They can also be used as sunscreens for the hair or the skin.

The examples below serve to illustrate the present invention without limiting it. Unless stated otherwise, all amounts, proportions and percentages are based on the weight and the total amount or on the total weight of the preparations.

Examples:

Example 1 (foam-like O/W cream):

Emulsi n l	% by wt.	% by v l.
Stearic acid	3.00	
Cetyl alcohol	8.50	
PEG-20 stearate	8.50	
C12-15 alkyl benzoates	4.00	
Paraffin oil	5.00	
Isohexadecanes	2.00	
Glycerol	5.00	
Sodium hydroxide	q.s.	
Preservative	q.s.	
Perfume	q.s.	
Water,demineralized	ad 100	
pH adjusted to 6.5-7.5		
Emulsion I		70
Nitrogen		30

Example 2 (O/W lotion):

Emulsion II	% by wt.	% by vol.
Stearic acid	2.00	
Myristyl alcohol	1.50	
Cetylstearyl alcohol	0.50	
PEG-100 stearate	3.0	
Mineral oil	5.00	
Hydrogenated polyisobutene	15.0	
Glycerol	3.00	
Sodium hydroxide	q.s.	
Preservative	q.s.	
Perfume	q.s.	
Water, demineralized	ad 100	
pH adjusted to 5.0-6.5		
Emulsion II		50
Gas (carbon dioxide)		50

Example 3 (O/W lotion):

Emulsion III	% by wt.	% by vol.
Stearic acid	5.00	
Cetylstearyl alcohol	5.50	
PEG-30 stearate	1.00	
Cyclomethicone	3.00	
Isoeicosane	10.00	
Polydecene	10.00	
Citric acid	0.10	
Glycerol	3.00	
Perfume, preservative,	q.s.	
Sodium hydroxide	q.s.	
Dyes etc.	q.s.	
Water	ad 100	
pH adjusted to 6.0-7.5		
Emulsion III		65
Gas (air)		35

Example 4 (O/W emulsion make-up):

Emulsion IV	% by wt.	% by vol.
Palmitic acid	2.00	
Cetyl alcohol	2.00	
PEG-100 stearate	2.00	
Dimethicone	0.50	
Paraffin oil	9.50	
Dicaprylyl ether	2.00	
Glycerol	3.00	
Mica	1.00	
Iron oxides	1.00	
Titanium dioxide	4.50	
Vitamin A palmitate	0.10	
Sodium hydroxide	q.s.	
Preservative	q.s.	
Perfume	q.s.	
Water,demineralized	ad 100	
pH adjusted to 6.0 –7.5		
Emulsion IV		37
Gas (Oxygen)		63

Exampl 5 (O/W cream):

Emulsion V	% by wt.	% by v l.
Stearic acid	4.00	
Cetyl alcohol	2.00	
PEG-30 stearate	2.00	
Sorbitan monostearate	1.50	
Paraffin oil	5.00	
Cyclomethicone	1.00	
Vitamin E acetate	1.00	
Retinyl palmitate	0.20	
Glycerol	3.00	
BHT	0.02	
Disodium EDTA	0.10	
Perfume, Preservative,		
Dyes	q.s.	
Potassium hydroxide	q.s.	
Water	ad 100	
pH adjusted to 5.0-7.0		
Emulsion V		43
Gas (nitrous oxide)		57

Example 6 (O/W lotion):

Emulsion VI	% by wt.	% by vol.
Stearic acid	4.00	
Cetylstearyl alcohol	1.00	
PEG-100 stearate	1.00	
Paraffin oil	6.50	
Dimethicone	0.50	
Vitamin E acetate	2.00	
Glycerol	3.00	
Perfume, preservative,		
Dyes etc.	q.s.	
Sodium hydroxide	q.s.	
Water	ad 100	
pH adjusted to 6.0-7.5		
Emulsion VI		35
Gas (argon)		65

Exampl 7 (sunscreen cream):

Emulsi n VII	% by wt.	% by vol.
Stearic acid	1.00	
Cetylstearyl alcohol	4.00	
Myristyl alcohol	1.00	
PEG-20 stearate	1.00	
Caprylic/Capric triglycerides	2.00	
Paraffin oil	15.50	
Dimethicone	0.50	
Octyl isostearate	5.00	
Glycerol	3.00	
Octyl methoxycinnamate	4.00	
Benzophenone-3	3.00	
Octyl salicylate	3.00	
BHT	0.02	
Disodium EDTA	0.10	
Perfume, preservatives,		
Dyes, etc.	q.s.	
Potassium hydroxide	q.s	
Water	ad 100	
pH adjusted to 5.0-6.0		
Emulsion VII		35
Gas (helium)		65